

REMARKS

Claims 19, 21-24 and 31 have been examined. Claim 19 has been amended.
Reconsideration of the claims, as amended, is respectfully requested.

Claim Rejections – 35 USC § 102

Claims 19 and 21-24 have been rejected under 35 USC § 102(b) as being anticipated by Donomoto. This rejection is respectfully traversed in part and overcome in part.

As now amended, independent claim 19 claims a method of casting a component from a metal having a liquidus temperature. Among the steps of the method is the step of utilizing a third part corresponding to the first part and repeating the steps b) to e) with the third part in place of the first part. In this way, molten metal is introduced into the third part whilst cooling the first part independently of the second part.

In contrast to the method of claim 19, the Donomoto patent relates to a method of casting a metal base composite comprising a reinforcing material (e.g., alumina fibers) embedded in a metal matrix (e.g., aluminum alloy). A focus of the Donomoto patent is a sacrificial inner mold made from a water soluble salt with a high melting point (e.g., sodium chloride) which can be dissolved to release the metal base composite casting once solidified. To do so, the Donomoto reference describes the following steps:

1. A two-part die, comprising a first part comprising the water soluble salt “retainer” 3, and a second part in the form of a casting mould 5 (see Figure 2 of US 4,573,519).
2. Pre-heating the retainer 3 to 680°C which is above the liquidus temperature (635°C) of the metal matrix alloy being used.
3. Placing the retainer 3 in the casting mould 5, the interior of which has been kept at 300°C until the retainer 3 is installed therein, *i.e.* below the liquidus temperature of the metal matrix alloy being used.
4. Removing the first part of the die from the second part.

In rejecting claim 19, the Office Action takes the position that the Donomoto reference discloses

all of the steps of claim 19. However, the Donomoto reference merely states that the product (in its retainer) is removed from the casting mold with a knock-out plunger after solidification of the metal alloy. Donomoto fails to disclose that the retainer is cooled independently of the casting mold before removing the solidified component from the retainer.

Hence, claim 19 is distinguishable over Donomoto which fails to describe the feature of “cooling the first part independently of the second part before removing the solidified component from the first part” once the first part of the die is removed from the second part after solidification of molten metal introduced into the die cavity. However, in order to expedite prosecution, an additional step (g) has been provided which further distinguishes over Donomoto. Claims 21-24 depend from claim 19 and are distinguishable for the same reasons.

Claim Rejections – 35 USC § 103

Claim 31 has been rejected under 35 USC § 102(a) as being unpatentable over Donomoto. Claim 31 depends from claim 19 which is distinguishable over Donomoto for at least the reasons previously described. Further, the method of independent claim 19 is not rendered obvious in view of Donomoto in that claim 19 recites not only that the first part of the die is cooled independently of the second part before removing the solidified component from the first part, but also that a third part corresponding to the first part is used to cast a component whilst the first part cools independently of the second part. This enables fast casting cycle times to be achieved, while ensuring that cast component quality is not prejudiced by premature stripping from the first die.

In contrast, the Donomoto reference fails to teach the reusing of the casting mold with a new retainer in order to achieve fast cycling times. While the casting mold of the Donomoto reference may be reused with a new retainer, there is no suggestion or teaching of so doing by removing the original retainer from the casting mold and cooling the retainer independently of the casting mold before removing the solidified component from the retainer, as well as to repeat the casting process with the new retainer while cooling the (original) retainer independently of the casting mold. Hence, for this additional reason both independent claim 19 and dependent claim 31 are distinguishable and in condition for allowance.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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